

**WEST VIRGINIA
GEOLOGICAL SURVEY**



Table No. 1—Group 2. West Virginia Spring Waters—General Information (Continued).

Spring No.	Name and Location	Owner	Geological Formation	Elevation	Date Observed	Estimated Gallons per minute	Temperature °F.
LEWIS COUNTY							
141	Alum Spring, Alum Bridge, W. Va.	Chas. Stark, Alum Bridge, W. Va.	Conemaugh	800	1-12-36	0.25	.....
WOOD COUNTY							
142	Borland Mineral Wells, at town of same name.	C. T. Leavitt, Parkersburg, W. Va.	.....	700	12-27-35	0.5	53
143	Mineral Wells, at town of same name.	Betty Waite Estate, W. H. Wolfe, Adm., Parkersburg, W. Va.	Salt Sand	600 300' deep	12-27-35	.....	54
POCAHONTAS COUNTY							
144	Big Spring, Linwood, W. Va.	Eugene Gatewood, Slaty Fork, W. Va.	Greenbrier Limestone	2940	12-7-35	300	49
145	Cave Spring, Head of Swago Creek	Withrow McClintock, Marlinton, W. Va.	Basal Greenbrier	3450	9-24-35	2000	52
146	Cochrane Spring, 1.5 mi. W. of Onoto, W. Va.	Porter Sharp, Onoto, W. Va.	Basal Greenbrier	2500	12-7-35	500	49
147	Garfield Grimes Spring, 2 mi. E. of Dunmore, W. Va.	Garfield Grimes, Dunmore, W. Va.	Heiderberg-Oriskany Contact	2550	12-7-35	75	58
148	C. D. Buzzard Spring, 1.1 mi. S. E. of Dunmore, along Highway	A. A. Buzzard, Dunmore, W. Va.	Salina	2600	12-7-35	30	49
149	Gibson Spring, 0.5 mi. W. of Frost, W. Va.	Sherman Gibson, Frost, W. Va.	Heiderberg Limestone	2500	12-6-35	500	50
150	Adam Moore Chaybete, Head of Sharp Run	Adam Moore, Campbelltown, W. Va.	Maestacy Series	2250	12-7-35	0.5	51
151	Sharp Spring, 1.5 mi. W. of Campbelltown, W. Va.	James A. Sharp, Campbelltown, W. Va.	Basal Greenbrier	2450	12-7-35	1000	50
WEBSTER COUNTY							
152	Wm. Smith Well, Dertown, Webster Springs, W. Va.	John Hoover, Webster Springs, W. Va.	Alderson Limestone of Greenbrier Greenbrier Series	1460 71 ft. deep	1-12-36	0.5	46

POCAHONTAS COUNTY

144	Big Spring, Linwood, W. Va.....	Eu
145	Cave Spring, Head of Swago Creek.....	W
146	Cochrane Spring, 1.5 mi. W. of Onoto, W. Va.....	Pc
147	Garfield Grimes Spring, 2 mi. E. of Dunmore, W. Va..	Gr
148	C. D. Buzzard Spring, 1.1 mi. S. E. of Dunmore, along Highway.....	A
149	Gibson Spring, 0.5 mi. W. of Frost, W. Va.....	S
150	Adam Moore Chalybeate, Head of Sharp Run.....	A
151	Sharp Spring, 1.5 mi. W. of Campbelltown, W. Va....	J

WEBSTER COUNTY

152	Wm. Smith Well, Dörtown, Webster Springs, W Va..	J
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Owner	Geological Formation	Elevation	Date Observed	Per minute	Temperature °F.
Chas. Stark, Alum Bridge, W. Va.	Conemaugh.	800	1-12-36	0.25	.....
C. T. Leavitt, Parkersburg, W. Va. ....	.....	700	12-27-35	0.5	53
Betty Waite Estate, W. H. Wolfe, Adm., Parkersburg, W. Va.	Salt Sand.	600 300' deep	12-27-35	.....	54
Eugene Gatewood, Slaty Fork, W. Va.	Greenbrier Limestone.	2940	12-7-35	300	49
Withrow McClintock, Marlinton, W. Va. ...	Basal Greenbrier.	3450	9-24-35	2000	52
Porter Sharp, Onoto, W. Va.	Basal Greenbrier.	2500	12-7-35	500	49
Garfield Grimes, Dunmore, W. Va.	Helderberg-Oriskany Contact. ...	2550	12-7-35	75	58
A. A. Burrard, Dunmore, W. Va.	Salina.	2600	12-7-35	30	49
Sherman Gibson, Frost, W. Va.	Helderberg Limestone.	2500	12-6-35	500	50
Adam Moore, Campbelltown, W. Va.	Macerady Series.	2350	12-7-35	0.5	51
James A. Sharp, Campbelltown, W. Va.	Basal Greenbrier.	2450	12-7-35	1000	50
John Hoover, Webster Springs, W. Va.	Alderson Limestone of Greenbrier Greenbrier Series	1460 71.5' deep	1-12-36	0.5	46

Table No. 4. West Virginia Spring Waters—Chemical Analyses—in parts per million (Continued).

Spring No.	Name and Location	Leak- tion Loss	Solids after Evap- oration	SiO ₂	(Fe, Al, O ₂)	Fe	Ca	Mg	Na	K	HCO ₃	SO ₄	Cl	NO ₃	H ₂ S	Total Of Deter- mined Constitu- ents	Analyst
MARSH COUNTY																	
27	Monarch Lake Spring, about 4 mi. W. of Marshall, W. Va.	32	213	36	.....	trace	8.4	4.8	66	2.9	209	26	1.9	None	4.	359	HAH
GRANT COUNTY																	
28	Johnson Run Spring, Head of Johnson Run	46	416	13	2.5	.....	104	15	*8	.....	205	140	1.7	1.5	None	490.7	M & H
29	Spring Run Spring, Head of Spring Run	22	146	6	5.5	.....	47	6.4	*2.9	.....	143	10	1	1.3	None	223.1	JBM
PENOLETON COUNTY																	
30	Falling Spring, about 0.5 mi. W. of Lone Poplar Spring	60	128	5.5	1.6	.....	39	4.4	*6.6	.....	129	7.4	1.1	0.75	None	195.35	JBM
31	Pinebarger Spring, 5 mi. S. of Franklin, W. Va.	0.2	93	8.8	(0.95)	0.38	28	1.7	1.9	1	85	6.5	0.79	0.75	None	134.82	JBM
32	Thorn Spring, Remison Grounds	1.6	117	7.2	(0.7)	0.38	38	3.6	0.95	0.88	124	5.3	0.65	1.	None	182.76	JBM
POCAHONTAS COUNTY																	
33	Averill Spring, Haysdam, W. Va.	48	170	18.	3.2	.....	34	5.3	*2.5	.....	122	6.9	0.9	3	None	185.8	JBM
34	Beaver Creek Sulphur Spring, 6 mi. W. of Huntersville, W. Va.	6.5	175	11.	(2.0)	1.3	30	10.	19.	2.2	156	24	6.3	0.05	2.4	262.25	JBM
35	Curry Spring, 0.5 mi. E. of Huntersville, W. Va.	1.8	71	7.	(0.9)	0.63	23	1.3	2.3	0.21	75	1.3	0.63	0.75	None	112.12	JBM
36	Dunmore Drinking Spring, Dunmore, W. Va.	21	182	7.3	2.3	.....	45	8.4	*2.8	.....	114	45	0.86	0.1	None	225.76	JBM
37	Dunmore Meadow Springs, Dunmore, W. Va.	14	198	9.4	2.4	.....	49	9.5	*3.1	.....	114	55	0.95	trace	None	243.35	JBM
38	Dunmore Pool Supply Springs, Dunmore, W. Va.																

SPRINGS OF WEST VIRGINIA

Table No. 4. West Virginia Spring Waters—Chemical Analyses—in parts per million (Continued).

Total Of
Deter-

30	Falling Spring, about 0.3 mi. W. of Lone Topiar Spring.....	60
31	Pitsenbarger Spring, 5 mi. S. of Franklin, W. Va.....	0
32	Thorn Spring, Reunion Grounds.....	1

POCAHONTAS COUNTY

33	Averill Spring, Hepsedam, W. Va.....	4
34	Beaver Creek Sulphur Spring, 6 mi. W. of Huntersville, W. Va.....	
35	Curry Spring, 0.3 mi. E. of Huntersville, W. Va.....	
36	Dunmore Drinking Spring, Dunmore, W. Va.....	
37	Dunmore Meadow Springs, Dunmore, W. Va.....	
38	Dunmore Pool Supply Springs, Dunmore, W. Va.....	

Table No. 4. West Virginia Spring Waters—Chemical Analyses—in parts per million (Continued).

Spring No.	Name and Location	Ignition Loss	Solids after Evaporation	SiO ₂	(Fe, Al, O ₂)	Fe	Ca	Mg	Na	K	HCO ₃	SO ₄	Cl	NO ₃	H ₂ S	Total Of Determined Constituents	Analyst
POCAHONTAS COUNTY (Cont.)																	
39	Melaughin Springs, Hedgesdam, W. Va.	19	70	9.	.....	8.0	18	3.1	3.3	0.93	56	7.2	0.4	1.7	None	107.63	HAH
40	Minnehaha Springs, Minnehaha Springs, W. Va.	13	162	10	.....	0.84	40	6.5	5.6	3.5	115	34.	1.5	0.2	None	217.14	HAH
41	Peter McCarthy Spring, 6 mi. N. E. of Huntersville, W. Va. (No estimate)	.....	666	17	.....	0.005	155	45	9.8	2.6	120	438	2.3	None	None	789.705	HAH
42	Warwick Sulphur Spring, Edray, W. Va.	52	370	5.4	2.0	.....	84	18	*12.	.....	221	107	11.	0.2	7.2	467.8	JBM
WEBSTER COUNTY																	
43	Adkisson Melaughin Well, Webster Springs, W. Va.	430	6102	14	.....	0.09	155	46	2006.	57.	244	51	3459.	6.3	20.	6038.39	HAH
44	Fort Lick Spring, Webster Springs, W. Va.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10.+	.....	HAH
45	W. B. Tracy Well, Webster Springs, W. Va.	632	5487	15	.....	0.18	125	38	1916.	69.	276	4.5	3167.	5	1.	5616.68	HAH
GREENBRIER COUNTY																	
46	Alvon Springs Nos. 1 and 2, Alvon, W. Va.	8	88	7.5	.....	.15	25	4.5	2.2	2.2	88	5.1	1.9	0.25	None	186.8	HAH
47	Black Sulphur Springs, White Sulphur Springs, W. Va.	155	2218	17.	.....	1.1	439	125.	22.	1.2	205	1416.	17.	None	12.5	2255.8	HAH
48	Blue Sulphur Spring, Blue Sulphur Springs, W. Va.	121	1652	24.	.....	0.24	299	49.	119.	4.0	190	815	58.	None	7.2	1555.46	HAH
49	Chalybeate Spring, White Sulphur Springs, W. Va.	16	88	4.	.....	4.5	7	1.9	2.4	1.6	Acid	43	trace	None	None	64.41	HAH
50	White Sulphur Spring, White Sulphur Springs, W. Va.	338	2957	17.	2.0	.....	362	84.	*96.	.....	236	1865	16.	.....	9.4	2149.4	HAH
MONROE COUNTY																	
51	Loftine Spring, Salt Sulphur Springs, W. Va.	367	2672	24.	3.1	.....	430	99.	*173.	.....	339	1378	93.	None	9.6	2848.73	HAH
52	Old Sweet Spring, Sweet Springs, W. Va.	111	813	18	1.1	.....	298	58.	*36.	.....	716	435	27	None	None	1588.1	HAH
53	Red Sulphur Spring, Red Sulphur Springs, W. Va.	65	310	17	.....	8.	49.	21.	30	1.3	264	84	2.2	0.3	18.2	495.02	HAH
54	Salt Sulphur Spring, Salt Sulphur Springs, W. Va.	128	3278	29	0.21	526.	142	236	11.0	251	1975	120	None	30.	3320.21	HAH

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No.

Name and Location

POCAHONTAS COUNTY (Cont.)

- 39 McLaughlin Springs, Hepsedam, W. Va.....
- 40 Minnehaha Spring, Minnehaha Springs, W. Va.....
- 41 Peter McCarthy Spring, 6 mi. N. E. of Huntersville, W.
(No estimate).....
- 42 Warwick Sulphur Spring, Edray, W. Va.....

WEBSTER COUNTY

- 43 Addison McLaughlin Well, Webster Springs, W. Va.....
- 44 Fork Lick Spring, Webster Springs, W. Va.....
- 45 W. B. Tracy Well, Webster Springs, W. Va.....

Spring No. 34. Beaver Creek Sulphur Spring.

Location: 6 miles west of Huntersville, Pocahontas County.

Physical Data.

Elevation: 2470'.
 Geological Horizon: Portage Group Shale.
 Temperature: Date observed, 6-2-35, 57.2° F.; 9-24-35, 59.0° F.
 Rate of flow: Date observed, 6-2-35, 0.5 gallon per minute.
 Owner: Lee Simms, Huntersville, W. Va.

Chemical Analysis.

Analyst: John B. McCue.

<i>Constituent.</i>	<i>Parts per Million.</i>
Solids after evaporation.....	175.0
Ignition loss.....	6.5
Silica (SiO ₂).....	11.0
Ferric oxide and Alumina (Fe, Al) ₂ O ₃).....	(2.0)
Iron (Fe).....	1.3
Calcium (Ca).....	30.0
Magnesium (Mg).....	10.0
Sodium (Na).....	19.0
Potassium (K).....	2.2
Bicarbonate (HCO ₃).....	156.0
Sulfate (SO ₄).....	24.0
Chloride (Cl).....	6.3
Nitrate (NO ₃).....	0.05
Hydrogen sulfide gas (H ₂ S).....	2.4

Total of determined constituents.....**262.25**

Remarks: Calcic—sodic—sulphuretted.

Comments: This is one of the very few sulphur waters in a county noted for the number and variety of its springs. It is located near the new Watoga State Park and is in a very poor condition. If cleaned out and properly curbed, it might prove very popular with vacationists visiting the Park.

Spring No. 35. Curry Spring.

Location: By roadside at home of Sherman P. Curry, 0.3 mile east of Huntersville, Pocahontas County.

Physical Data.

Elevation: 2260'.
 Geological Horizon: Helderberg Limestone.
 Temperature: Date observed, 6-2-35, 49.1° F.; 9-23-26, 50.5° F.
 Rate of flow: Date observed, 6-2-35, 30 gallons per minute.
 Owner: Sherman P. Curry, Huntersville, W. Va.

Spring No. 34. Beaver Creek Sulphur Spring.

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Analyst: John B. McCue.

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Solids after evaporation.....	175.0
Ignition loss.....	6.5
Silica (SiO ₂).....	11.0
Ferric oxide and Alumina (Fe, Al) ₂ O ₃).....	(2.0)
Iron (Fe).....	1.3
Calcium (Ca).....	30.0
Magnesium (Mg).....	10.0
Sodium (Na).....	19.0
Potassium (K).....	2.2
Bicarbonate (HCO ₃).....	156.0
Sulfate (SO ₄).....	24.0
Chloride (Cl).....	6.3
Nitrate (NO ₃).....	0.05
Hydrogen sulfide gas (H ₂ S).....	2.4
Total of determined constituents.....	262.25

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 Rate of flow: Date observed: 6-2-35, 30 gallons per minute.
 Owner: Sherman P. Curry, Huntersville, W. Va.

SPRINGS OF WEST VIRGINIA

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Location: 6 miles west of Huntersville, Pocahontas County.

Physical Data.

Elevation: 2470'.

Geological Horizon: Portage Group Shale.

Temperature: Date observed, 6-2-35, 57.2° F.; 9-24-35, 59.0° F.

Rate of flow: Date observed, 6-2-35, 0.5 gallon per minute.

Owner: Lee Simms, Huntersville, W. Va.

Chemical Analysis.

Analyst: John B. McCue.

<i>Constituent.</i>	<i>Parts per Million.</i>
Solids after evaporation	175.0
Ignition loss	6.5

Chemical Analysis.

Analyst: John B. McCue.

<i>Constituent.</i>	<i>Parts per Million.</i>
Solids after evaporation.....	175.0
Ignition loss.....	6.5
Silica (SiO_2).....	11.0
Ferric oxide and Alumina ($\text{Fe, Al}_2\text{O}_3$).....	(2.0)
Iron (Fe).....	1.3
Calcium (Ca).....	30.0
Magnesium (Mg).....	10.0
Sodium (Na).....	19.0
Potassium (K).....	2.2
Bicarbonate (HCO_3).....	156.0
Sulfate (SO_4).....	24.0
Chloride (Cl).....	6.3
Nitrate (NO_3).....	0.05
Hydrogen sulfide gas (H_2S).....	2.4
Total of determined constituents.....	262.25

Remarks: Calcic—sodic—sulphuretted.

Comments: This is one of the very few sulphur waters in a county noted for the number and variety of its springs. It is located near the new Watoga State Park and is in a very poor condition. If cleaned out and properly treated it might become very popular with

Sodium (Na)	10.0
Potassium (K)	19.0
Bicarbonate (HCO_3)	2.2
Sulfate (SO_4)	156.0
Chloride (Cl)	24.0
Nitrate (NO_3)	6.3
Hydrogen sulfide gas (H_2S)	0.05
	2.4

Total of determined constituents	262.25
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Remarks: Calcic—sodic—sulphuretted.

Comments: This is one of the very few sulphur waters in a county noted for the number and variety of its springs. It is located near the new Watoga State Park and is in a very poor condition. If cleaned out and properly curbed, it might prove very popular with vacationists visiting the Park.

Spring No. 35. Curry Spring.

Location: By roadside at home of Sherman P. Curry, 0.3 mile east of Huntersville, Pocahontas County.

Physical Data.

Elevation: 2260'.

Geological Horizon: Helderberg Limestone.

Temperature: Date observed, 6-2-35, 49.1° F.; 9-23-25, 50.5° F.

Rate of flow: Date observed: 6-2-35, 30 gallons per minute.

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Spring No. 35. Curry Spring.

Location: By roadside at home of Sherman P. Curry, 0.3 mile east of Huntersville, Pocahontas County.

Physical Data.

Elevation: 2260'.

Geological Horizon: Helderberg Limestone.

Temperature: Date observed, 6-2-35, 49.1° F.; 9-23-25, 50.5° F.

Rate of flow: Date observed: 6-2-35, 30 gallons per minute.

Owner: Sherman P. Curry, Huntersville, W. Va.

Chemical Analysis.

Analyst: John B. McCue.

<i>Constituent.</i>	<i>Parts per Million.</i>
Solids after evaporation	71.0
Ignition loss	1.8
Silica (SiO_2)	7.0
Ferric oxide and Alumina ($\text{Fe, Al}_2\text{O}_3$)	(0.9)
Iron (Fe)	0.63
Calcium (Ca)	23.0
Magnesium (Mg)	1.3
Sodium (Na)	2.3
Potassium (K)	0.21
Bicarbonate (HCO_3)	75.0
Sulfate (SO_4)	1.3
Chloride (Cl)	0.63
Nitrate (NO_3)	0.75
Manganese (Mn)	None
Hydrogen sulfide gas (H_2S)	None
Total of determined constituents	112.12

Remarks: Very few solids for a limestone water.

Comments: Curbed with concrete and covered with a wooden roof. A ram, operated by the flow, pumps water for Mr. Curry's use.

Chemical Analysis.

Analyst: John B. McCue.

Constituent.	
Solids after evaporation.	71.0
Ignition loss.	1.8
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Silica (SiO_2)	7.0
Ferric oxide and Alumina ($\text{Fe, Al}_2\text{O}_3$)	(0.9)
Iron (Fe)	0.63
Calcium (Ca)	23.0
Magnesium (Mg)	1.3
Sodium (Na)	2.3
Potassium (K)	0.21
Bicarbonate (HCO_3)	75.0
Sulfate (SO_4)	1.3
Chloride (Cl)	0.63
Nitrate (NO_3)	0.75
Manganese (Mn)	None
Hydrogen sulfide gas (H_2S)	None
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Total of determined constituents	112.12

Remarks: Very few solids for a limestone water.

Comments: Curbed with concrete and covered with a wooden roof. A ram, operated by the flow, pumps water for Mr. Curry's use.

Spring No. 36. Dunmore Spring (Drinking).

Location: Dunmore, Pocahontas County.

Physical Data.

Elevation: 2500'.
 Geological Horizon: Bossardville-Heldoberg Limestone contact.
 Temperature: Date observed, 6-2-35, 63.0° F.; 9-2-35, 62.5° F.
 Rate of flow: Date observed, 6-2-35, 30 gallons per minute.
 Owner: J. W. Price, M. D., Marlinton, W. Va.

Chemical Analysis.

Analyst: John B. McCue.

Constituent.	
Solids after evaporation.	182.0
Ignition loss.	21.0
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Silica (SiO_2)	7.3
Ferric oxide and Alumina ($\text{Fe, Al}_2\text{O}_3$)	2.3
Calcium (Ca)	45.0
Magnesium (Mg)	8.4
Sodium (Na) and Potassium (K)	2.8
Bicarbonate (HCO_3)	114.0
Sulfate (SO_4)	45.0

Parts
per Million.

Remarks: Very few solids for a limestone water.

Comments: Curbed with concrete and covered with a wooden roof. A ram, operated by the flow, pumps water for Mr. Curry's use.

Spring No. 36. Dunmore Spring (Drinking).

Location: Dunmore, Pocahontas County.

Physical Data.

Elevation: 2500'.

Geological Horizon: Bossardville-Helderberg Limestone contact.

Temperature: Date observed, 6-2-35, 63.0° F.; 9-2-35, 62.5° F.

Rate of flow: Date observed, 6-2-35, 30 gallons per minute.

Owner: J. W. Price, M. D., Marlinton, W. Va.

Chemical Analysis.

Analyst: John B. McCue.

<i>Constituent.</i>		<i>Parts per Million.</i>
Solids after evaporation	182.0
Ignition loss	21.0
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Silica (SiO_2)	7.3
Ferric oxide and Alumina ($\text{Fe, Al}_2\text{O}_3$)	2.3
Calcium (Ca)	45.0
Magnesium (Mg)	8.4
Sodium (Na) and Potassium (K)	.....	2.8
Bicarbonate (HCO_3)	.....	114.0
Sulfate (SO_4)	.....	45.0

Chloride (Cl)	0.86
Nitrate (NO ₃)	0.10
Manganese (Mn)	Trace
Hydrogen sulfide gas (H ₂ S)	None

Total of determined constituents 225.76

Remarks: Calcic—sodic—alkaline.

Comments: This is a fine, potable water for table use. Samples that have stood several months show no deposited sediment. The mineral content varies but little from year to year. See attached analysis.

Spring No. 36. Dunmore Drinking Spring (Reece Prichard Spring).

Location: 0.8 mile southeast of Dunmore, Pocahontas County.

Physical Data.

Geological Horizon: Bossardville Limestone.

Chemical Analysis.

Analyst: B. B. Kaplan, Survey Chemist.

<i>Constituent.</i>	<i>Parts per Million.</i>
Ignition loss	66.44
Calcium (Ca)	32.72
Magnesium (Mg)	6.02
Carbonate (CO ₃)	49.02
Sulfate (SO ₄)	23.74
Sulphur trioxide (SO ₃)	48.66

Total of determined constituents 160.16

Remarks: Recalculated to p. p. m. by B. R. Drake from an analysis quoted in "Detailed Report on Pocahontas County", W. Va. Geological Survey, (1929).

Spring No. 37. Meadow Spring.

Location: At Dunmore, Pocahontas County.

Physical Data.

Elevation: 2500'.
 Geological Horizon: Bossardville-Helderberg Limestone contact.
 Temperature: Date observed, 5-2-35, 66.2° F.
 Rate of flow: Date observed, 5-2-35, 200 gallons per minute.
 Owner: J. W. Price, M. D., Marlinton, W. Va.

Chemical Analysis.

Analyst: John B. McCue.

SPRINGS OF WEST VIRGINIA

Chloride (Cl)	0.86
Nitrate (NO_3)	0.10
Manganese (Mn)	Trace
Hydrogen sulfide gas (H_2S)	None

Total of determined constituents	225.76
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Remarks: Calcic—sodic—alkaline.

Comments: This is a fine, potable water for table use. Samples that have stood several months show no deposited sediment. The mineral content varies but little from year to year. See attached analysis.

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Prichard Spring).**

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Geological Horizon: Bossardville Limestone.

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Physical Data.

Geological Horizon: Bossardville Limestone.

Chemical Analysis.

Analyst: B. B. Kaplan, Survey Chemist.

<i>Constituent.</i>	<i>Parts per Million.</i>
Ignition loss.....	66.44
Calcium (Ca)	32.72
Magnesium (Mg)	6.02
Carbonate (CO ₃)	49.02
Sulfate (SO ₄)	23.74
Sulphur trioxide (SO ₃)	48.66
Total of determined constituents.....	160.16

Remarks: Recalculated to p. p. m. by B. R. Drake from an analysis quoted in "Detailed Report on Pocahontas County", W. Va. Geological Survey, (1929).

Remarks: Recalculated to p. p. m. by B. R. Drake from an analysis quoted in "Detailed Report on Pocahontas County", W. Va. Geological Survey, (1929).

Spring No. 37. Meadow Spring.

Location: At Dummore, Pocahontas County.

Physical Data.

Elevation: 2500'.

Geological Horizon: Bossardville-Helderberg Limestone contact.

Temperature: Date observed, 5-2-35, 66.2° F.

Rate of flow: Date observed, 5-2-35, 200 gallons per minute.

Owner: J. W. Price, M. D., Marlinton, W. Va.

Chemical Analysis.

Analyst: John B. McCue.

WEST VIRGINIA GEOLOGICAL SURVEY

95

<i>Constituent.</i>	<i>Parts per Million.</i>
Solids after evaporation	198.0
Ignition loss	14.0
Silica (SiO_2)	9.4
Ferric oxide and Alumina ($\text{Fe, Al}_2\text{O}_3$)	2.4
Calcium (Ca)	49.0
Magnesium (Mg)	9.5
Sodium (Na) and Potassium (K)	3.1
Bicarbonate (HCO_3)	114.0
Sulfate (SO_4)	55.0
Chloride (Cl)	0.95
Nitrate (NO_3)	Trace
Manganese (Mn)	Trace
Hydrogen sulfide gas (H_2S)	None

Total of determined constituents.....

243.35

Remarks: Calcic—alkaline—sodic.

Comments: Rises in a meadow beyond No. 36. Is not used and is not protected in any manner.

Spring No. 38. Upper Spring.

Location: At Dunmore, Pocahontas County.

Comments: ... is not protected in any manner.

Spring No. 38. Upper Spring.

Location: At Dunmore, Pocahontas County.

Physical Data.

Elevation: 2500'.

Geological Horizon: Bossardville-Helderberg Limestone contact.

Temperature: Date observed, 9-23-35, 62.5° F.

Owner: J. W. Price, M. D., Marlinton, W. Va.

Comments: The level of the pool of this spring was raised by a dam in 1933 so that water would flow by gravity to a swimming pool. In the pool of the spring, Mrs. Anna Price Hunter erected a statue from her own design, which represents an Indian giving thanks for the gift of this water. The owners have erected the swimming pool just mentioned, a bath-house, and a tastefully designed refreshment stand near by, making the spot very attractive to vacationists and passers-by. Cress is grown for sale in the water flowing from this spring and periwinkles thrive in it—one of the few places in West Virginia where they may be found. See photograph.

Spring No. 39. Largest McLaughlin Spring.

Location: Near Hepsedam State Fish Hatchery, Pocahontas County.

Thanks for the key to this water. The owners have erected the swimming pool just mentioned, a bath-house, and a tastefully designed refreshment stand near by, making the spot very attractive to vacationists and passers-by. Cress is grown for sale in the water flowing from this spring and periwinkles thrive in it—one of the few places in West Virginia where they may be found. See photograph.

Spring No. 39. Largest McLaughlin Spring.

Location: Near Hepsedam State Fish Hatchery, Pocahontas County.

Physical Data.

Elevation: 2360'.

Geological Horizon: Greenbrier Limestone.

Temperature: Date observed, 6-2-35, 50.2° F.; 9-24-35, 52.5° F.

SPRINGS OF WEST VIRGINIA

Rate of flow: Date observed, 6-2-35, 2000 gallons per minute.
 Owner: Bank of Marlinton, Marlinton, W. Va.

Chemical Analysis.

Analyst: Homer A. Hoskins.

<i>Constituent.</i>	<i>Parts per Million.</i>
Solids after evaporation	70.0
Ignition loss	19.0
Silica (SiO_2)	9.6
Iron (Fe)	8.0
Calcium (Ca)	18.0
Magnesium (Mg)	3.1
Sodium (Na)	3.3
Potassium (K)	0.93
Bicarbonate (HCO_3)	56.0
Sulfate (SO_4)	7.2
Chloride (Cl)	0.4
Nitrate (NO_3)	1.7
Manganese (Mn)	None
Hydrogen sulfide gas (H_2S)	None
Total of determined constituents	107.63

Comments: Typical of the large springs of the basal Greenbrier.
 Flow averages 1500 to 2000 gallons per minute and varies seasonally
 somewhat, but never goes dry. Unprotected.

Sulfate (SO ₄)	7.2
Chloride (Cl)	0.4
Nitrate (NO ₃)	1.7
Manganese (Mn)	None
Hydrogen sulfide gas (H ₂ S)	None

Total of determined constituents 107.63

Comments: Typical of the large springs of the basal Greenbrier. Flow averages 1500 to 2000 gallons per minute and varies seasonally somewhat, but never goes dry. Unprotected.

Spring No. 40. Minnehaha Spring.

Location: At Minnehaha Springs, Pocahontas County.

Physical Data.

Elevation: 2340'.
Geological Horizon: Marcellus-Oriskany contact.
Temperature: Date observed, 6-1-35, 70.5° F.; 9-23-35, 72.0° F.
Rate of flow: Date observed, 6-1-35, 1000 gallons per minute.
Owner: Richter & Johnson, Washington, D. C.

Chemical Analysis.

Analyst: Homer A. Hoskins.

<i>Constituent.</i>	<i>Parts per Million.</i>
Solids after evaporation	162.0
Ignition loss	13.0
Silica (SiO ₂)	10.0
Iron (Fe)	0.84
Calcium (Ca)	40.0
Magnesium (Mg)	6.5
Sodium (Na)	5.6

Spring No. 40. Minnehaha Spring.

Location: At Minnehaha Springs, Pocahontas County.

Physical Data.

Elevation: 2340'.

Geological Horizon: Marcellus-Oriskany contact.

Temperature: Date observed, 6-1-35, 70.5° F.; 9-23-35, 72.0° F.

Rate of flow: Date observed, 6-1-35, 1000 gallons per minute.

Owner: Richter & Johnson, Washington, D. C.

Chemical Analysis.

Analyst: Homer A. Hoskins.

<i>Constituent.</i>	<i>Parts per Million.</i>
Solids after evaporation	162.0
Ignition loss	13.0
<hr/>	
Silica (SiO ₂)	10.0
Iron (Fe)	0.84
Calcium (Ca)	40.0
Magnesium (Mg)	6.5
Sodium (Na)	5.6
Potassium (K)	3.5

SPRINGS OF WEST VIRGINIA

Rate of flow: Date observed, 6-2-35. 2000 gallons per minute.
 Owner: Bank of Marlinton, Marlinton, W. Va.

Chemical Analysis.

Analyst: Homer A. Hoskins.

<i>Constituent.</i>		<i>Parts per Million.</i>
Solids after evaporation		70.0
Ignition loss		19.0
Silica (SiO ₂)		9.6
Iron (Fe)		8.0
Calcium (Ca)		18.6
Magnesium (Mg)		3.1
Sodium (Na)		3.3
Potassium (K)		0.93
Bicarbonate (HCO ₃)		56.0
Sulfate (SO ₄)		7.2
Chloride (Cl)		0.4
Nitrate (NO ₃)		1.7
Manganese (Mn)		None
Hydrogen sulfide gas (H ₂ S)		None

Total of determined constituents

107.63

Comments: Typical of the large springs of the basal Greenbrier.
 Flow averages 1500 to 2000 gallons per minute and varies seasonally
 somewhat, but never goes dry. Unprotected.

Spring No. 40. Minnehaha Spring.

Location: At Minnehaha Springs, Pocahontas County.

Physical Data.

Elevation: 2340'.
 Geological Horizon: Marcellus-Oriskany contact.
 Temperature: Date observed, 6-1-35, 70.5° F.; 9-23-35, 72.0° F.
 Rate of flow: Date observed, 6-1-35, 1000 gallons per minute.
 Owner: Richter & Johnson, Washington, D. C.

Chemical Analysis.

Analyst: Homer A. Hoskins.

<i>Constituent.</i>		<i>Parts per Million.</i>
Solids after evaporation		162.0
Ignition loss		13.0
Silica (SiO ₂)		10.0
Iron (Fe)		0.84
Calcium (Ca)		40.0
Magnesium (Mg)		6.5
Sodium (Na)		5.6
Potassium (K)		3.5

Bicarbonate (HCO_3)	115.0
Sulfate (SO_4)	34.0
Chloride (Cl)	1.5
Nitrate (NO_3)	0.2
Manganese (Mn)	Trace
Hydrogen sulfide gas (H_2S)	None

Total of determined constituents	217.14
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Remarks: Very similar to Danmore Springs.

Comments: This spring arises over a large area, a large part of which is surrounded by a concrete wall to impound the water, but there is no other protection. There are a small, heated swimming pool and a small, but very comfortable hotel on the premises, making the spot ideal for a restful vacation. Only one previous analysis was found in the literature; it is attached hereto.

Spring No. 40. Minnehaha Springs.

Location: Minnehaha Springs, Pocahontas County.

Physical Data.

Elevation: 2330' B.
 Geological Horizon: Marcellus-Oriskany.
 Temperature: 72° F.
 Rate of flow: 1040 gallons per minute.
 Owner: W. A. H. Hobbs.

Chemical Analysis.

Analyst: B. B. Kaplan, W. Va. Geological Survey.

Constituent.	Parts per Million.
Ignition loss	10.05
Silica (SiO_2)	6.5
Ferric oxide and Alumina ($\text{Fe, Al}_2\text{O}_3$)	0.11
Calcium (Ca)	20.23
Magnesium (Mg)	6.45
Sodium (Na)	7.73
Potassium (K)	1.02
Carbonate (CO_2)	69.18
Sulfate (SO_4)	8.79
Chloride (Cl)	13.37
Nitrate (NO_3)	Trace
Free Ammonia (NH_3)	0.03
Total of determined constituents	153.01

Remarks: Recalculated to p. p. m. by B. B. Drake from an analysis in "Detailed Report on Pocahontas County", W. Va. Geological Survey, (1929).

WEST VIRGINIA GEOLOGICAL SURVEY

97

Bicarbonate (HCO_3)	115.0
Sulfate (SO_4)	34.0
Chloride (Cl)	1.5
Nitrate (NO_3)	0.2
Manganese (Mn)	Trace
Hydrogen sulfide gas (H_2S)	None

Total of determined constituents	217.14
----------------------------------	--------

Remarks: Very similar to Dunmore Springs.

Comments: This spring arises over a large area, a large part of which is surrounded by a concrete wall to impound the water, but there is no other protection. There are a small, housed swimming pool and a small, but very comfortable hotel on the premises, making the spot ideal for a restful vacation. Only one previous analysis was found in the literature; it is attached hereto.

Spring No. 40. Minnehaha Springs.

Location: Minnehaha Springs, Pocahontas County.

Spring No. 40. Minnehaha Springs.

Location: Minnehaha Springs, Pocahontas County.

Physical Data.

Elevation: 2330' B.

Geological Horizon: Marcellus-Oriskany.

Temperature: 72° F.

Rate of flow: 1040 gallons per minute.

Owner: W. A. H. Hobbs.

Chemical Analysis.

Analyst: B. B. Kaplan, W. Va. Geological Survey.

<i>Constituent.</i>	<i>Parts per Million.</i>
Ignition loss.....	10.05
Silica (SiO ₂).....	6.5
Ferric oxide and Alumina (Fe, Al) ₂ O ₃	0.11
Calcium (Ca).....	39.23
Magnesium (Mg).....	6.45
Sodium (Na).....	7.73
Potassium (K).....	1.62
Carbonate (CO ₃).....	69.18
Sulfate (SO ₄).....	8.79
Chloride (Cl).....	13.37
Nitrate (NO ₃).....	Trace
Free Ammonia (NH ₃).....	0.03

Total of determined constituents.....

153.01

Remarks: Recalculated to p. p. m. by B. R. Drake from an analysis in "Detailed Report on Pocahontas County", W. Va. Geological Survey, (1929).

Spring No. 41. Peter McCarthy Spring.

Location: 6 miles N. E. of Huntersville off Browns Creek, Pocahontas County.

Physical Data.

Elevation: 2513'.

Geological Horizon: Bossardville Limestone.

Temperature: Date observed, 9-25-35, 63.5° F.

Rate of flow: Date observed, 9-25-35, 300 gallons per minute.

Owner: Peter McCarthy Heirs, Huntersville, W. Va.

Chemical Analysis.

Analyst: Homer A. Hoskins.

<i>Constituent.</i>	<i>Parts per Million.</i>
Solids after evaporation	666.0
Silica (SiO ₂)	17.0
Iron (Fe)	0.005
Calcium (Ca)	155.0
Magnesium (Mg)	45.0
Sodium (Na)	9.8
Potassium (K)	2.6
Bicarbonate (HCO ₃)	120.0
Sulfate (So ₄)	488.0
Chloride (Cl)	2.3
Nitrate (NO ₃)	None
Manganese (Mn)	None
Hydrogen sulfide gas (H ₂ S)	None
Total of determined constituents	789.705

Remarks: Calcic—sodic—alkaline.

Comments: There are really two springs, and they are warm, so warm that they never freeze until everything else around is frozen, and then only in very cold weather. (Mr. Moody Moore, informant). They are entirely unprotected.

Spring No. 42. Warwick Sulphur Spring.

Location: E. R. Sharp farm, 1 mile southeast of Onoto, Pocahontas County.

Physical Data.

Elevation: 2430'.

Geological Horizon: Greenbrier-Maccrady contact.

Temperature: Date observed, 6-2-35, 56° F.; 9-24-35, 60° F.

Rate of flow: Date observed, 6-2-35, 0.5 gallon per minute;

9-24-35, 0.25 gallon per minute.

Owner: E. R. Sharp, Marlinton, W. Va.

Spring No. 41. Peter McCarthy Spring.

Location: 6 miles N. E. of Huntersville off Browns Creek, Pocahontas County.

Physical Data.

Elevation: 2513'.

Geological Horizon: Bossardville Limestone.

Temperature: Date observed, 9-25-35, 63.5° F.

Rate of flow: Date observed, 9-25-35, 300 gallons per minute.

Owner: Peter McCarthy Heirs, Huntersville, W. Va.

Chemical Analysis.

Analyst: Homer A. Hoskins.

<i>Constituent.</i>	<i>Parts per Million.</i>
Solids after evaporation	666.0
Silica (SiO ₂)	17.0

Rate of flow: Date observed: 5-20-00, 500 gallons per minute.
Owner: Peter McCarthy Heirs, Huntersville, W. Va.

Chemical Analysis.

Analyst: Homer A. Hoskins.

<i>Constituent.</i>	<i>Parts per Million.</i>
Solids after evaporation	666.0
Silica (SiO_2)	17.0
Iron (Fe)	0.005
Calcium (Ca)	155.0
Magnesium (Mg)	45.0
Sodium (Na)	9.8
Potassium (K)	2.6
Bicarbonate (HCO_3)	120.0
Sulfate (SO_4)	438.0
Chloride (Cl)	2.3
Nitrate (NO_3)	None
Manganese (Mn)	None
Hydrogen sulfide gas (H_2S)	None
Total of determined constituents	789.705

Remarks: Calcic—sodic—alkaline.

Comments: There are really two springs, and they are warm, so warm that they never freeze until everything else around is frozen, and then only in very cold weather. (Mr. Moody Moore, informant). They are entirely unprotected.

Formulae: Ca^{++} — SO_4^{--} — Mg^{++} — Cl^- .

Comments: There are really two springs, and they are warm, so warm that they never freeze until everything else around is frozen, and then only in very cold weather. (Mr. Moody Moore, informant). They are entirely unprotected.

Spring No. 42. Warwick Sulphur Spring.

Location: E. R. Sharp farm, 1 mile southeast of Onota, Pocahontas County.

Physical Data.

Elevation: 2430'.

Geological horizon: Greenbrier-Maccrady contact.

Temperature: Date observed, 6-2-35, 56° F.; 9-24-35, 60° F.

Rate of flow: Date observed, 6-2-35, 0.5 gallon per minute; 9-24-35, 0.25 gallon per minute.

Owner: E. R. Sharp, Marlinton, W. Va.

Chemical Analysis.

Analyst: John B. McCue.

<i>Constituent.</i>		<i>Parts per Million.</i>
<i>Solids after evaporation.</i>		
<i>Ignition loss.</i>		52.0
Silica (SiO ₂)	5.4	
Ferric oxide and Alumina (Fe, Al) ₂ O ₃)	2.0	
Calcium (Ca)	84.0	
Magnesium (Mg)	18.0	
Sodium (Na) and Potassium (K)	12.0	
Bicarbonate (HCO ₃)	221.0	
Sulfate (SO ₄)	107.0	
Chloride (Cl)	11.0	
Nitrate (NO ₃)	0.2	
Manganese (Mn)	None	
Hydrogen sulfide gas (H ₂ S)	7.2	

Total of determined constituents.....

467.8

Remarks: Sulphuretted—calcic—sodic.

Comments: Taken as typical of the shale waters, although the flow is small and varies quite a bit. Unprotected. Compare with No. 34. These (34 and 42) were the only sulphur springs visited in this county and are perhaps the only ones.

Spring No. 43. Addison McLaughlin Well.

Location: Below Court-House at Webster Springs, Webster County.

Physical Data.

Elevation: 1462'.
Geological Horizon: Greenbrier Limestone.
Temperature: Date observed, 6-6-35, 55.0° F.; 10-2-35, 54.5° F.
Rate of flow: Date observed, 6-6-35, 5 gallons per minute.
Owner: J. M. Hoover et al., Webster Springs, W. Va.

Chemical Analysis.

Analyst: Homer A. Hoskins.

<i>Constituent.</i>		<i>Parts per Million.</i>
<i>Solids after evaporation.</i>		
<i>Ignition loss</i>		430.0
Silica (SiO ₂)	14.0	
Iron (Fe)	0.09	
Calcium (Ca)	155.0	
Magnesium (Mg)	46.0	
Sodium (Na)	2006.0	
Potassium (K)	57.0	

Chemical Analysis.

Analyst: John B. McCue.

<i>Constituent.</i>	<i>Parts per Million.</i>
Solids after evaporation.....	370.0
Ignition loss.....	52.0
<hr/>	
Silica (SiO_2).....	5.4
Ferric oxide and Alumina ($\text{Fe, Al}_2\text{O}_3$).....	2.0
Calcium (Ca).....	84.0
Magnesium (Mg).....	18.0
Sodium (Na) and Potassium (K).....	12.0
Bicarbonate (HCO_3).....	221.0
Sulfate (SO_4).....	107.0
Chloride (Cl).....	11.0
Nitrate (NO_3).....	0.2
Manganese (Mn).....	None
Hydrogen sulfide gas (H_2S).....	7.2
<hr/>	
Total of determined constituents.....	467.8

Remarks: Sulphuretted—calcic—sodic.

Comments: Taken as typical of the shale waters, although the
Comparison with No.

34. These () are perhaps the only ones. Webster Springs visited in this county

Spring No. 43. Addison McLaughlin Well.

Location: Below Court-House at Webster Springs, Webster County.

Physical Data.

Elevation: 1462'.

Geological Horizon: Greenbrier Limestone.

Temperature: Date observed, 6-6-35, 55.0° F.; 10-2-35, 54.5° F.

Rate of flow: Date observed, 6-6-35, 5 gallons per minute.

Owner: J. M. Hoover et al., Webster Springs, W. Va.

Chemical Analysis.

Analyst: Homer A. Hoskins.

<i>Constituent.</i>	<i>Parts per Million.</i>
Solids after evaporation.....	6102.0
Ignition loss.....	430.0
	<hr/>
Silica (SiO ₂).....	14.0
Iron (Fe).....	0.09
Calcium (Ca).....	155.0
Magnesium (Mg).....	46.0
Sodium (Na).....	2006.0
Potassium (K).....	57.0



Plate XXVI.—Minnehaha Spring.—This spring, located at the village of the same name in Pocahontas County, supplies a fine indoor swimming pool and a comfortable hotel. The waters are said to have real medicinal value in the treatment of rheumatism and stomach disorders.—Photo by Hoskins.



Plate XXVII.—Dunmore Spring.—This beautiful spring rises at Dunmore, Pocahontas County, in the valley where Lord Dunmore's war was fought. Many improvements have been made by Mrs. Anna Price Hunter, who designed and erected the beautiful statue pictured here.—Photo by Hoskins.



Plate XXVIII.—The McLaughlin Spring.—The waters of this spring can not all be seen because they issue from many crevices in the rock and flow under a mat of vegetation to the stream below. However, it is one of the largest springs in the State and illustrative of the many which water the lands of Pocahontas County. This spring is located at Hepsedam, near Marlinton. A fish hatchery is close by.—Photo by Hoskins.



Plate XXIX.—State Fish Hatchery at Hepsedam.—This fish hatchery, located in Pocahontas County, is supplied by the waters of Averill spring, indicating an important use of spring water in the State. There are several other hatcheries in West Virginia, namely at Petersburg, Ridge and Leetown, all dependent on unfailing springs for their water supply. Without these our streams would soon be fished completely barren of trout and bass.—Photo by courtesy of Major Shawhan.

Pendleton	136	Eagle Rock Spring
Pendleton	137	Dry Run Spring
Pendleton	138	Corley No. 9 (Coal Test Well)
Randolph	139	Talbott Heirs No. 2 Test Well
Barbour	140	Abe Samberson Spring (Well)
Pleasants	141	Alum Spring
Lewis	142	Borland Mineral Wells
Wood	143	Mineral Wells
Wood	33	Averill Spring
Pocahontas	34	Beaver Creek Sulphur Spring
Pocahontas	35	Curry Spring
Pocahontas	36	Dunmore Drinking Spring
Pocahontas	37	Dunmore Meadow Spring
Pocahontas	38	Dunmore Pool Supply Spring
Pocahontas	39	McLaughlin Spring
Pocahontas	40	Minnehaha Spring
Pocahontas	41	Peter McCarthy Spring
Pocahontas	42	Warwick Sulphur Spring
Pocahontas	144	Linwood Big Spring
Pocahontas	145	Cave Spring
Pocahontas	146	Cochrane Spring

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**WEST VIRGINIA
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